

GHERM Monthly Exercise #2

Your Task:

This exercise will focus on Influenza, and where high risk individuals are located for your area. Use the 2000 census data to determine where populations 65 years + and 0-4 years are located. Create a pdf document called “monthly_ex2.pdf” that contains a map of your area and the locations of high risk individuals. Include major roads and cities as a reference.

Note: Age demographic data is available in the tract_demo2000 shapefile in the gherm/census/ folder.

If needed, follow the detailed guide below to complete the exercise.

Email the pdf file(s) to briedd@dhss.mo.gov, along with any comments you may have about the exercise.

Please complete this exercise by December 10, 2004. If you require more time, or have any questions about this exercise, please contact me at any time. Please complete this exercise by December 10, 2004. If you require more time, or have any questions about this exercise, please contact me at any time. It is important that you let me know if you will be unable to complete this project or will be late, as I am keeping track of participation for the BT grant.

Debbie Briedwell
573-522-8306
briedd@dhss.mo.gov


Detailed Guide:

Open a new empty map in ArcMap.


1. Open ArcMap.
2. Select “A new empty map”.

Perform a ‘Save’ to save your project as ‘monthly_ex2.mxd’.

Add the County shapefile to your project and set the symbology so there is no fill color.

1. Click on the ‘Add Data’ icon  and then navigate to your gherm\distbnd\ folder.
2. Select ‘County.shp’ and click on the ‘Add’ button.
3. Change the display color by clicking on the rectangle box for County in the table of contents.
4. Select ‘Hollow’ for the color, and then OK.

Add the census data shapefile 'tract_demo2000' to your project and change the name to Census Data.

1. Click on the 'Add Data' icon  and then navigate to your gherm\census\ folder.
2. Select 'tract_demo2000.shp' and click on the 'Add' button.
3. To change the name, open the properties of tract_demo2000 by right-clicking on the name in the table of contents and selecting Properties.
4. Click on the General tab at the top of the Layer Properties dialog box, and change the Layer Name to 'Census Data'.
5. Select OK to close the dialog box.

Turn off the visibility of the tract_demo2000 layer by unchecking its box in the table of contents.

Locate your county and zoom the map to it.

There are several ways to locate your county. Below are some different options:

- Select the 'zoom in' tool and window around your county.
- Select the 'Select Features' tool and click inside your county.
In the table of contents, click the + symbol on the left of "Political Boundary" to see all the layers in that group. Right-click on 'county' and select 'Selection', 'Zoom to selected feature'.
- Under the 'Selection' pull-down menu, go to 'Select by Attributes'. Set the layer to County. Create the expression similar to: "NAME" = 'COLE' but substitute your county for 'COLE'. Click 'Apply'. Close the dialog box. In the table of contents, click the + symbol on the left of "Political Boundary" to see all the layers in that group. Right-click on 'county' and select 'Selection', 'Zoom to selected feature'.

If needed, clear the selected features.

1. Go to 'Selection', 'Clear Selected Features'.

Open the table for Census Data. Note the following definitions for some of the fields:

- Field names ending in 90 are 1990 census figures
- Field names ending in 00 are 2000 census figures
- 'POP00' = Total 2000 population for a census tract
- 'AGE0-4' = 2000 Population for children ages 0-4
- 'AGE65_PLUS' = 2000 Population for adults 65 years or more
- 'PCT_OVR65' = Percent of population 65 or more

Close the table after you have become familiar with the data fields.

Make the Census Data layer visible (click the box in the table of contents).

The Census Data shapefile is too large to display for the whole state. Select only the census data that is in your county and make a new shapefile called 'census_MYCOUNTY.shp'.

To select the tracts in your county, we can use the field 'Name', which contains the county name for each tract and use 'select by attribute'.

1. Under the 'Selection' pull-down menu, choose 'Select by attribute'.
2. Make sure the Layer is set to 'Census Data', and method is 'Create a new selection'.
3. In the 'Fields:' box, find "NAME" and double-click on it so that it appears in the bottom text box.
4. Click on the '=' button.
5. Find your county name in the 'Unique values:' area and double-click on it. If you cannot find your county name you may have to select 'Complete List' for it to add the name to the selections.
6. The bottom text area should now show: "NAME" = 'mycounty' where mycounty is your county name.
7. Click the Apply button to run the query.
8. The selected tracts should be highlighted on in your map view.

Export the selected data to a new shapefile:

1. Right-click on Census Data and select Data, Export.
2. Use 'Selected Features' and 'Use the same Coordinate System as this layer's source data.'
3. Set the output file to your desired directory, with the name 'census_MYCOUNTY.shp' (where MYCOUNTY is the name of your country)
4. When prompted, add the shapefile to your current view.

Remove the Census Data layer from your view.

1. Right-click on Census Data in the table of contents and select 'Remove'.

Now we will look at the different age populations.

We will begin with the 0-4 age group. Change the symbology for census_MYCOUNTY using a range of values with 4 classes, and a color ramp from yellow to red.

1. Right-click on census_MYCOUNTY and select 'Properties'.
2. Under Properties choose > Symbology > Quantities > Graduated Colors.
3. Under the Fields section, set the Value field to **AGE0_4**. Leave the Normalization at <NONE>.
4. ArcView will automatically set the number of classes to 5, using a Natural Breaks method of classification. Change this number to 4.
5. Set the color ramp from light green to dark green using the Color Range pull-down.
6. Since these numbers are counts, you don't need to display the decimals. To control the number of decimal places, right-click on one of the color boxes in the "Symbol" area. Select "Format Labels" and change the decimal places to 0. Click

“OK”. The Range column will look the same, but now the Label column should show no decimal places.

Change the name of the layer to ‘Age 0 – 4’

Now we want to do display the information for the ≥ 65 group. To do this we can copy and paste the Age 0-4 layer and modify the symbology.

1. In the table of contents, right-click on the Age 0-4 layer, and select ‘Copy’.
2. At the top of the table of contents, right-click on ‘Layers’ and select ‘Paste Layer’. This will add a duplicate of the census layer to your view.
3. Modify the symbology by double-clicking on the top Age 0-4 layer and opening its properties.
4. Under the Symbology tab, change the Value field to AGE65_PLUS. The values will automatically adjust for your ranges. Note that you will have to set the decimal places to 0 again for the labels (see step 5 above)
5. Change the name of the layer by selecting the General tab, and entering ‘Age 65 +’ for the Layer Name.
6. Select OK to close the properties dialog box.

Save your project!

Now we want to look at the population counts for the 0-4 age group and the 65+ age group. To do this we will have to calculate a new field that combines Age0_4 and Age65_PLUS.

First we must add a new field to put our calculations in.

1. Open the attribute table for the Age 65+ layer.
2. Click on the ‘Options’ button and select ‘Add Field’.
3. In the Add Field dialog box, Enter ‘HighRskPop’, with a type of Short Integer, and select OK.
4. Scroll your table fields to the right until you reach the end and can see the HighRskPop field.
5. Right-click on the name HighRskPop and select ‘Calculate Values’.
6. You will get a message that tells you that you are calculating outside of an edit session. Select ‘Yes’ to continue.
7. In the Field Calculator, select AGE0_4, then the + button and then select AGE65_PLUS. The text box should read [AGE0_4]+[AGE65_PLUS]
8. Select OK to calculate the values.
9. The HighRskPop field should now contain the sum of the two age groups.

Display the information for the “high risk” group. To do this, once again we can copy and paste the Age 0-4 layer and modify the symbology.

1. Right-click on the Age 0-4 layer, and select ‘Copy’.

2. At the top of the table of contents, right-click on 'Layers' and select 'Paste Layer'. This will add a duplicate of the census layer to your view.
3. Modify the symbology by double-clicking on the top Age 0-4 layer and opening its properties.
4. Under the Symbology tab, change the Value field to 'HighRskPop'. The values will automatically adjust for your ranges. Note that you will have to set the decimal places to 0 again for the labels (see step 5 above)
5. Change the name of the layer by selecting the General tab, and entering 'Estimated High Risk Population' for the Layer Name.

Select OK to close the properties dialog box.

Save your project!

You now have several ways to view demographic data for your area. There are other layers that should be included in the map. Add the major roads to your project.

1. Using the 'Add Data' icon, navigate to the /gherm/trans/ folder. Add the layers for Interstates, US highways, and Missouri Highways.

Set the symbology for each new layer.

Change the symbology on the interstate layer:

1. Right click on the interstate layer and choose "Properties".
2. Select the "Symbology" tab.
3. *Click on the colored line to open the "Symbol Selector".* There are many predefined lines to choose from, or you can set your own.
4. Select the line symbol called 'Highway Ramp', then "OK". Select "OK" in the Layer Properties dialog box.

Tip: As a shortcut, a single left-click on the symbol in the Table of Contents will take you straight to the symbology. A single right-click on the symbol will take you straight to a color palette.

Change the symbology for the other two layers.

Label the roads.

To label US Highways:

1. Check the 'Label Features in this layer' box.
2. Under the layer properties label tab, set the Text String Label Field to "Route".

3. Under Pre-defined Label Style, click the Label Styles... button.
4. Select the U.S. Highway symbol, and then OK.

To label Missouri Highways:

1. Check the 'Label Features in this layer' box.
2. Under the layer properties label tab, set the Text String Label Field to "Route".
3. In order for the symbol to view properly, select "Label Placement Options" under Other Options. Under the "Placement" tab, select the option to only display the symbol "centered on line" and the angle should be set to "horizontal". Click "OK". In the label dialog, select "OK".
4. Under Text Symbol, click on Symbol.
5. Select 'Properties' to modify the look of the label.
6. Under the Advanced Text, check the Text Background box and then click on 'Properties'.
7. Change the Type to Marker Text Background.
8. Check the box for 'Scale marker to fit text'
9. Select the icon for 'Symbol'. Choose 'Circle 2' from the list, and set the fill color to white. Select OK. Continue to select ok in the dialog boxes until you are back to the Layer properties dialog box.
10. Be sure to check the box to display your labels. Select OK to close the dialog box.

Add points for major cities/towns to your project.

1. Using the 'Add Data' icon, navigate to the /gherm/distbnds/ folder and add "citytownpts"
2. Change the symbology to a black circle, size 10.
3. Turn on the labels for citytownpts. Adjust the font and color if desired.

Now make a layout showing where high risk individuals are located in your county.

Turn off the 'Age 65+' and 'Age 0-4' layers.

Create a layout of your map.

Use the icon at the lower left portion of the map screen to change your view to layout.

Use the LetterPortrait.mxt template to add a title, legend, scalebar, northarrow, etc to your map.

Right-click on a white space outside of your map in your layout.

Select Change Layout from the pull-down menu.

Select the General tab, and then click on LetterPortrait.mxt, and then Finish.

Modify the title.

Select the title, move it above the map and change the text to read “Influenza High Risk Populations”

Modify the legend.

1. Double-click on the legend to open the properties dialog box.
2. Under the Items tab, remove the roads layers and county layer.
3. Change the style of ‘High Risk Individuals’ by selecting the name under Legend Items, and then clicking Style...
4. Select the description ‘Horizontal Single Symbol Layer Name and Label’ and then ‘OK’.
5. Select the ‘Legend’ tab at the top of the dialog box.
6. Uncheck the ‘Show’ button so the legend title will not display.
7. If needed, give the Legend a white background with a black border. Under the Frame tab, select a 2.0 width border, with a gap of x=5 and y = 5. Under background, scroll all the way to the bottom of the list and select white. Add a gap of x=5 and y = 5 for the background as well. Select OK to close the Legend Dialog.
8. Move the legend to a desired position on your layout.
9. Change the size of your map frame so that it does not overlap with your legend. To do this, click on the map, and click and drag one of the grip points found on the edge of the map frame.

Modify the Scale Bar.

1. Double-click the scale bar to open the property dialog.
2. Under the ‘Scale and Units’ tab, set the Division Units to ‘Miles’.
3. Under the Format tab, change the Style to a bar of your preference.

Modify the map description text.

1. Double-click on the small text that says “<Double-click to enter text>”
2. Change the text to the following 3 lines:
Line 1: Your Name
Line 2: Today’s Date
Line 3: the name of your project file
3. Move the text to the bottom right of the map page.

Add text to your layout to describe ‘High Risk Individuals’ and your data source.

1. From your Drawing toolbar, select the New Text icon.
2. At the bottom of your page, click on your layout to begin entering text.
3. Type in “High Risk Individuals represent populations age 0-4 years and 65 years and older.” And then select OK.
4. Add another text line directly below the previous line. At text that reads “Source: 2000 Census Data through Missouri Census Data Center.”

Adjust any items in your layout needed.

Save your project.

Export the map as “monthly_ex2.pdf”.

1. Under File, select ‘Export Map’. Change the Save as type to PDF.
2. Make sure the file will save to the proper directory and click Export.

Extra:

If you would like to create a map of just 65+ populations:

1. Turn off ‘High Risk Individuals’ in the table of contents.
2. Turn on ‘Age 65+’
3. Modify the legend in the layout so the style of the ‘65+’ layer shows the layer name and labels.
4. Change the title and text to reflect the information the map portrays.

The same can be done for the 0-4 group by turning on and off the proper layers and adjusting the layout legend and text.

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